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NATIONAL COMMUNICATIONS

NATIONAL COMMUNICATIONS FROM PARTIES INCLUDED IN ANNEX I TO THE CONVENTION

Addendum

Part Two: Tables of inventories of anthrogenic emissions and removals in 1990 and projected anthropogenic emissions in 2000

Note by the secretariat

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INVENTORIES OF ANTHROPOGENIC EMISSIONS AND REMOVALS IN 1990
Tables A.1 - A.8

PROJECTED ANTHROPOGENIC EMISSIONS IN 2000
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General notes to the tables

Data on inventories of emissions and removals as well as data on projections are included in the tables below. The purpose of these tables is to present in a consistent and comparable fashion inventory data from all the national communications received by the secretariat. However, it should be borne in mind that part of the information taken from national communications received since the first compilation and synthesis and presented in these tables is provisional and has not been subject to a technical analysis and review by experts. The data provided by the Parties will be further reviewed and analysed for incorporation in the second compilation and synthesis of national communications from Annex I Parties to be prepared for the Conference of the Parties at its second session.

In some cases, the figures presented do not correspond to those in national communications as originally submitted. To the extent possible, such cases are explained in the notes to the tables, with the exception of differences resulting from rounding due to data input and processing. Differences have arisen from corrections of typographical and calculation errors or omissions, the incorporation of data communicated in the course of in-depth reviews and the presentation (for consistency and comparability) of subtotals and totals not provided in the communications.

Some of the differences are due to the fact that, in striving to ensure consistency and comparability of results, the secretariat has had to convert some of the estimates reported so that they concur with the guidelines for preparation of national communications. Such changes include subtraction of emissions from bunker fuels and "electricity import corrections".

The tables comprise estimates provided by 28 Parties included in Annex I to the Convention and Belgium that is to become a Party on 15 April 1996, plus estimates provided by Liechtenstein and Monaco.

Explanatory notes to the tables

Blanks in the tables signify either an absence of quantitative information or the fact that only qualitative information was provided. The secretariat has chosen to leave the spaces blank in order not to complicate the reading of the tables. The figure "zero" appears in the tables only when reported as such by the Parties.

Two dots (..) indicate that data were not estimated or reported in the national communication.
Two hyphens (--) indicate that the item is not applicable.
A minus sign (-) indicates a deficit or decrease, except as indicated.
A plus sign (+) indicates an increase.
A full stop (.) is used to indicate decimals.
(~) before data indicates an approximation.
($\leq$) indicates that the actual data are equal to or less than the data provided.
($\geq$) indicates that the actual data are equal to or greater than the data provided.

References to "guidelines" are to document A/AC.237/55, annex I, decision 9/2, annex to this decison entitled "Guidelines for the preparation of first communications by Annex I Parties". Text in *italics* under the tables indicates major source/sink categories from the IPCC Guidelines.

The following chemical symbols have been used:

CF_4	Tetrafluoromethane
CFCs	Chlorofluorocarbons
C_2F_6	Hexafluoroethane
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
HCFCs	Hydrochlorofluorocarbons
HFCs	Hydrofluorocarbons
N_2O	Nitrous oxide
NO_x	Nitrogen oxides
NMVOCs	Non-methane volatile organic compounds
PFCs	Perfluorocarbons
SF_6	Sulphur hexafluoride
VOCs	Volatile organic compounds

The following weights have been used:

Gg	Gigagrams (10^9 grams)

Table A.1 **Anthropogenic CO_2 emissions, excluding land use change and forestry, 1990 (Gigagrams and percentage of total by Party)** **(Provisional)**

	Energy				Industrial processes		Waste		Other**		Total
	Fuel combustion*		Fugitive fuel emissions								
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	277,987	96.2	4,086	1.4	6,892	2.4					288,965[a]
Austria	57,100	96.5			2,100[b]	3.5					59,200
Belgium	106,298	92.9			7,198	6.3	914	0.8			114,410
Canada	418,947	91.6	15,756	3.4	21,224	4.6	1,514	0.3			457,441
Czech Republic[c]	157,364	94.9	0	0.0	8,428	5.1					165,792[a]
Denmark	50,934	97.8			1,166	2.2					52,100
Estonia[d]	37,170	98.0			627	1.7			150	0.4	37,947[a]
Finland	52,600	97.6	100	0.2	1,200	2.2					53,900
France	349,660	95.4	181	0.0	16,695	4.6	[e]		[f]		366,536[a]
Germany[c]	987,000	97.2	0	0.0	28,000	2.8					1,015,000
Greece	76,210	92.8			5,890	7.2			[g]		82,100
Hungary	68,105[h]	95.0			3,568[i]	5.0					71,673[j]
Ireland	29,038	94.5	0	0.0	1,627	5.3	54	0.2			30,719
Italy	401,350	93.6			27,591	6.4	[k]		0	0.0	428,941[a]
Japan	1,075,360	91.6			53,000	4.5	45,000[l]	3.8			1,173,360
Latvia	22,606	98.4			371	1.6					22,976
Liechtenstein[m]											208
Monaco							71	100.0			71
Netherlands	164,800	98.3			1,900	1.1	900	0.5			167,600
New Zealand	22,769	89.2	271	1.1	2,490	9.8					25,530[a]
Norway	26,967	75.9	1,694	4.8	6,494	18.3	81[n]	0.2	297	0.8	35,533
Poland[o]	[p]		[q]		[r]		[s]				414,930
Portugal	38,686	91.8			3,462	8.2					42,148
Romania[m]											171,103[t]
Russian Federation[m]	2,327,939[u]	97.5	18,330	0.8	40,326	1.7					2,386,595
Slovak Republic	55,033	94.4			2,775	4.8	470	0.8			58,278
Spain[c]	209,012	84.3	413	0.2	17,696	7.1	2,159[l]	0.9	18,725	7.6	248,005[a]
Sweden	55,122	90.0	53	0.1	4,972	8.1	275[n]	0.4	834[v]	1.4	61,256[a]
Switzerland	40,800	93.6	0	0.0	2,100	4.8	700	1.6	0	0.0	43,600[a]
UK[c]	563,401	97.6	5,677	1.0	7,421[w]	1.3	512[l]	0.1			577,012
USA	4,895,432	98.8	6,560	0.1	55,030[x]	1.1					4,957,022[a]
Total[y]	12,567,690	96.5	53,121	0.4	330,243	2.5	52,650	0.4	20,006	0.2	13,609,951

*See notes to Table A.2. **Includes source/sink categories *solvent use* and *agriculture*. In the light of the different ways of reporting used by Parties, emissions from *land use change and forestry* were excluded from the table for comparison and consistency purposes. Emission estimates were provided for the following source/sink categories for which no IPCC default methods exist: production of iron and steel, aluminium, other non-ferrous metals, ammonia, soda ash, lime, glass, fertilizer, other organic chemicals and CO_2 manufacture, limestone use and flue gas desulphurization and *solvent use*.

Notes

a) These Parties originally included *land use change and forestry* in their total CO_2 estimates.
b) Emissions from iron and steel were included in *energy* under energy and transformation industries.
c) Revised/additional data were provided during the in-depth review.
d) Party provided estimates for an additional category, wetlands, which was not included in this table.
e) Estimate of 8,038 Gg provided for emissions from waste but not included in national total.
f) Estimate of 4 Gg provided for emissions from agricultural waste burning but not included in national total.
g) Estimate of 2,700 Gg provided for emissions from agricultural waste burning but not included in national total.
h) Emissions for base period (1986-1987): 80,089 Gg.
i) Emissions for base period (1986-1987): 3,587 Gg
j) Total emissions for base period (1986-1987): 83,676 Gg.
k) Estimate of 7,282 Gg provided for emissions from waste but not included in national total.
l) Parties deviated from IPCC Guidelines by including CO_2 emissions from organic waste combustion, aerobic, organic carbon in landfills, dumps, sludge or compost facilities in national total.
m) Party did not provide inventory data according to IPCC reporting format.
n) No details provided as to whether CO_2 emissions from organic waste combustion, aerobic, organic carbon in landfills, dumps, sludge or compost facilities were included in national total.
o) The secretariat chose to report the emissions total only, as the Party used the CORINAIR reporting format in providing its 1990 inventory data.
p) Emissions for base year (1988): 483,700 Gg.
q) Emissions for base year (1988): 10,650 (10,450 - 10,850) Gg.
r) Emissions for base year (1988): 8,480 Gg.
s) Emissions for base year (1988): 1,750 (1,200 - 2,300) Gg.
t) The secretariat calculated estimates using per capita emission and population figures provided by the Party, as well as emissions for base year (1989): 198,247 Gg.
u) Party included bunker fuel emissions in its national total.
v) Party deviated from IPCC Guidelines by including biogenic emissions from agriculture in national total.
w) Emissions from iron and steel were included in *energy* under industry (fuel combustion).
x) Non-ferrous emissions included under non-fuel industrial uses in *energy*.
y) The percentages of the total accounted for by each category have been calculated on the basis of the overall total with the exclusion of Liechtenstein, Poland and Romania (13,023,710 Gg) since data for the individual categories for these Parties were not included in the table.

Table A.2 Anthropogenic CO_2 emissions from fuel combustion, 1990 (Gigagrams and percentage of total by Party) **(Provisional)**

	Energy and transformation industries		Industry		Residential, commercial/institutional		Transport		Other		Total
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	160,053	57.6	32,568	11.7	8,351	3.0	68,358[a]	24.6	8,657	3.1	277,987
Austria	13,700[b]	24.0	12,300[b]	21.5	12,100	21.2	16,200	28.4	2,800	4.9	57,100
Belgium	21,795	20.5	25,458	23.9	26,519	24.9	20,567	19.3	11,959	11.3	106,298
Canada	137,776	32.9	71,960	17.2	66,780	15.9	139,300	33.3	3,131	0.7	418,947
Czech Republic[e]	92,642	58.9	21,996	14.0	30,441	19.3	7,401	4.7	4,884	3.1	157,364
Denmark	26,435[c]	51.9	5,964	11.7	6,487	12.7	11,241	22.1	807	1.6	50,934
Estonia	28,450	76.5	2,845	7.7	3,224	8.7	2,651	7.1			37,170
Finland	19,500[d]	37.1	13,700	26.0	5,800	11.0	11,500	21.9	2,100	4.0	52,600
France	60,813	17.4	71,056	20.3	81,845	23.4	128,124	36.6	7,822	2.2	349,660
Germany[e]	440,000[f]	44.6	170,000	17.2	198,000	20.1	159,000	16.1	21,000	2.1	987,000
Greece	43,780	57.4	9,700	12.7	8,260[g]	10.8	14,460	19.0			76,210
Hungary	29,746[h]	43.7	7,893[h]	11.6	18,415[h]	27.0	8,208[k]	12.1	2,462[h]	3.6	68,105[m]
Ireland	10,863	37.4	5,431	18.7	7,199	24.8	4,885	16.8	660	2.3	29,038
Italy	138,291	34.5	91,345	22.8	67,473	16.8	95,624	23.8	8,617	2.1	401,350
Japan	387,692[n]	36.1	296,167	27.5	126,201	11.7	206,800	19.2	58,500[n]	5.4	1,075,360
Latvia	8,309	36.8	2,680	11.9	3,140	13.9	5,661	25.0	2,815	12.5	22,606
Liechtenstein[v]											
Monaco											
Netherlands	51,400[p]	31.2	33,400	20.3	28,700	17.4	26,900	16.3	24,400[q]	14.8	164,800
New Zealand	6,832	30.0	4,334	19.0	1,699	7.5	8,731	38.3	1,173	5.2	22,769
Norway	7,481	27.7	3,023	11.2	2,357	8.7	13,249	49.1	857	3.2	26,967[r]
Poland[s]									[t]		[u]
Portugal	19,386	50.1	6,079	15.7	1,936	5.0	9,947	25.7	1,338	3.5	38,686
Romania[v]											
Russian Federation[v]	1,015,684	43.6	458,855	19.7			853,401[w]	36.7			2,327,939
Slovak Republic[e]	15,679	28.5	21,155	38.4	12,537	22.8	3,628	6.6	2,034	3.7	55,033
Spain[e]	76,783	36.7	46,403	22.2	20,340	9.7	60,218	28.8	5,269	2.5	209,012
Sweden	7,041	12.8	13,446	24.4	11,543[g]	20.9	23,092	41.9			55,122
Switzerland[f]	1,300	3.2	5,700	14.0	18,100[g]	44.4	15,300[y]	37.5	400	1.0	40,800
UK[e]	231,277	41.1	96,673	17.2	109,149	19.4	119,247	21.2	7,056	1.3	563,401
USA	1,742,471	35.6	1,065,905	21.8	551,002	11.3	1,502,626	30.7	33,428[z]	0.7	4,895,432
Total	4,795,179	38.2	2,596,036	20.7	1,427,598	11.4	3,536,319	28.1	212,169	1.7	12,567,690

Notes

a) Military transport is included under "other" *energy* (fuel combustion).
b) Includes waste incineration for the production of energy, without details as to whether biogenic CO_2 emissions were included.
c) The electricity import correction of 6253 Gg was subtracted by the secretariat from the subtotal given in the communication.
d) Emissions equivalent to electricity imports of 11,000 Gg were also provided.
e) Revised/additional data were provided during the in-depth review.
f) Includes waste incineration for the production of energy.
g) Includes emissions from agriculture and forestry category in *energy*.
h) Emissions for base period (1985-1987): 36,928 Gg.
i) Emissions for base period (1985-1987): 10,893 Gg.
j) Emissions for base period (1985-1987): 20,042 Gg.
k) Emissions for base period (1985-1987): 7,741 Gg.
l) Emissions for base period (1985-1987): 4,485 Gg.
m) Total emissions from fuel combustion for base period (1985-1987): 80,089 Gg.
n) Estimates provided during the review include statistical difference (9,000 Gg.)
o) Party deviated from IPCC Guidelines by including emissions from biomass burned for energy in *energy* total because biomass material used is imported.
p) Party also provided temperature adjusted total energy emissions of 171,200 Gg which are not included in this table.
q) Includes actual emissions from agriculture and forestry (8,600 Gg) as well as feedstocks (14,800 Gg) and statistical difference (1,000 Gg).
r) Figure corrected during the in-depth review.
s) Party provided 1990 inventory data using the CORINAIR reporting format.
t) Emissions for base year (1988): 34,100 Gg.
u) Emissions for base year (1988): 462,820 Gg.
v) Party did not provide inventory data according to the IPCC reporting format.
w) Includes emissions from residential, commercial/institutional and other.
x) Emissions include oil and gas production and storage.
y) Emissions from bunker fuels (2,100 Gg) have been subtracted by the secretariat from the subtotal given in the communication.
z) Emissions from agriculture and forestry category in *energy* were not estimated; emissions from *energy* in the Party's territories are included.

Figure A.1. Distribution of CO_2 emissions by sub-source category

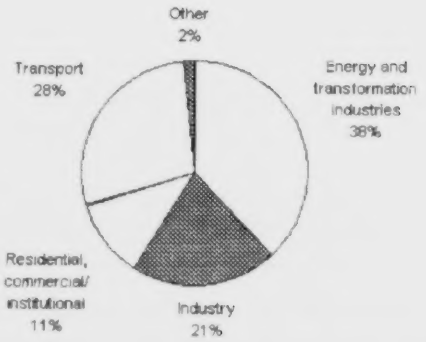


Table A.3 Anthropogenic emissions and removals from land use change and forestry and impact on total CO_2 emissions, 1990 (Gigagrams) **(Provisional)**

	Emissions	Removals	Land use change and forestry	National CO_2 emissions without land use change and forestry*	National CO_2 emissions with land use change and forestry
	A	B	C = A + B	D	E = C + D
Australia	156,293[a]	-25,450[b]	130,843	288,965	419,808
Austria[c]				59,200	59,200[d]
Belgium				114,410	114,410[d]
Canada			-282	457,441	457,159[d]
Czech Republic[z]			-2,265	165,792	163,527
Denmark			-2,600	52,100	49,500[d]
Estonia	3,399	-11,347	-7,947	37,947	30,000
Finland	72,000[e]	-103,000	-31,000[f]	53,900	22,900[d]
France	13,974[g]	-44,675[h]	-32,168[i]	366,536	334,368
Germany[z]			-20,000	1,015,000	995,000[d]
Greece				82,100	82,100[d]
Hungary	7,543[j]	-12,010[k]	-4,467[l]	71,673[m]	67,206[d][n]
Ireland			0	30,719	30,719[d]
Italy	3,670	-40,400	-36,730	428,941	392,211
Japan			-90,000[o]	1,173,360	1,083,360[d]
Latvia	6,280	-20,580	-14,300	22,976	8,676[d]
Liechtenstein				208	208[d]
Monaco				71	71[d]
Netherlands			-120	167,600	167,480[d]
New Zealand	1,255[a]	-17,971	-16,716	25,530	8,814
Norway[p]	16,900	-27,100	-10,200	35,533	25,333[d]
Poland[q]	[r]	[s]	[t]	414,930[u]	414,930[d][v]
Portugal				42,148	42,148[d]
Romania				171,103	171,103[d]
Russian Federation			-733,200	2,386,595	1,653,395[d]
Slovak Republic	462	-4,913	-4,451	58,278	53,827[d]
Spain[z]			-23,170	248,005	224,835
Sweden	75,434	-109,802	-34,368	61,256	26,888
Switzerland	5,317	-10,561[w]	-5,244	43,600	38,356
UK[x][z]	2,567[y]	-8,704	-6,137	577,012	570,875[d]
USA			-436,000	4,957,022	4,521,022
Total	365,094	-436,513	-1,380,522	13,609,951	12,229,429

*See table A.1.

This table summarizes information on the land use change and forestry source/sink category. It aims to present the data provided in a consistent and coherent manner, taking into account the different ways in which Parties have reported information for this category. The presentation of this table should improve as the availability of related data increases. Emission estimates were provided for the following sub-source/sink categories not addressed by the IPCC Guidelines: peat extraction, drainage of wetlands and deep peats.

Notes

a) Emission from forest clearing and on-site burning.
b) Includes sequestration from grassland conversion (-17,450 Gg) and managed forests (-8,000 Gg).
c) Category not estimated by Party but thought to be small.
d) These Parties originally excluded *land use change and forestry* from their total CO_2 estimates.
e) Emission estimates from cultivated peatlands (3,000-10,000 Gg) and non -viable drainage areas (1,000-5,000 Gg) were also provided but not included in this table.
f) *Land use change and forestry* estimate including cultivated peatlands and non-viable drainage areas would amount to 16,000-27,000 Gg.
g) Includes emissions from forest clearing and on-site burning (4,374 Gg) and grassland conversion (9,240 Gg).
h) Includes sequestration from abandonment of managed lands (-1,797 Gg) and managed forests (-42,878 Gg).
i) Takes account of double-counting of 1,467 Gg between forest clearing and grassland conversion.
j) Emissions for base period (1985-1987): 8,868 Gg.
k) Emissions for base period (1985-1987): -11,965 Gg.
l) Emissions for base period (1985-1987): -3,097 Gg.
m) Emissions for base period (1985-1987): 83,676 Gg.
n) Emissions for base period (1985-1987): 80,579 Gg.
o) Includes sequestration in wood products (-10,000 Gg) which, as recommended by the IPCC Guidelines, should not be reported as removals unless a net increase in stocks of forest products can be documented.
p) Includes CO_2 emissions from biomass.
q) Party did not provide *land use change and forestry* estimates for 1990.
r) Emissions for base year (1988): 14,920 Gg.
s) Removals for base year (1988): -33,200 Gg.
t) *Land use change and forestry* estimates for base year (1988): -18,280.
u) National CO_2 emissions without *land use change and forestry* for base year (1988): 483,700 Gg.
v) National CO_2 emissions with *land use change and forestry* for base year (1988): 465,420 Gg.
w) Includes sequestration in wood products (-550 Gg) which, as recommended by the IPCC Guidelines, should not be reported as removals unless a net increase in stocks of forest products can be documented.
x) An estimate of (0 to - 1,883 Gg) from conversion of grassland to cultivated lands was also provided but not included in this table.
y) Emissions from peat extraction, drainage of wetlands and deep peat.
z) Revised/additional data were provided during the in-depth review.

Table A.4 Anthropogenic emissions of CH_4, 1990 (Provisional)
(Gigagrams and percentage of total by Party)

	Energy				Agriculture				Waste		Other***		Total
	Fuel combustion		Fugitive fuel emissions		Livestock*		Other**						
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	28	0.4	1,026	16.4	3,005	48.1	396	6.3	1,391	22.3	397	6.4	6,243
Austria	24	4.0	92	15.2	259	42.9			228	37.9			603
Belgium[a]													
Canada[c]	29	0.9	1,247[b]	40.4	979	31.7	0	0.0	796[b]	25.8	39	1.3	3,089
Czech Republic[c]	59	6.3	531	56.4	195	20.7			151	16.0	6	0.6	942
Denmark	11[d]	2.8	11	2.8	262	64.5			122	29.9			406
Estonia	3	0.7	218	42.9	60	11.8			227	44.6			509
Finland	19	7.5	[e]		94	37.3			139	55.2			252
France	184	6.4	311	10.7	1,612	55.7	37	1.3	749	25.9	3	0.1	2,896
Germany[c]	245	4.3	1,549	27.1	2,045	35.7	0	0.0	1,870	32.7	14	0.2	5,723
Greece	19	5.6	39	11.4	165	48.0	10	2.9	110	32.1			343
Hungary	6[f]	1.0	366[g]	67.2	170[h]	31.2	3[i]	0.6	[j]				545[k]
Ireland	5	0.7	10	1.3	603	75.8	41	5.1	136	17.1	0	0.0	796
Italy	66	1.7	348	8.9	1,541	39.5	319	8.2	1,611	41.3	16	0.4	3,901
Japan	25	1.8	100	7.3	520	37.8	267	19.4	465	33.8			1,377
Latvia	2	1.5	2	1.1	111	70.0			44	27.4			159
Liechtenstein[l]													1
Monaco[m]													
Netherlands	28	2.6	149	14.0	508	47.6			382	35.8			1,067
New Zealand	28	1.3	33	1.6	1,618[n]	76.6			433[o]	20.5			2,112
Norway	17	5.9	13	4.5	91	31.5			167	57.8	1	0.3	289[p]
Poland[q]	[r]		[s]		[t]		[u]		[v]				6,100[w]
Portugal	13	5.7	2	0.9	163	72.0	13	5.7	35	15.5	0	0.2	226
Romania[l]													2,355[x]
Russian Federation[l]			19,600[y]	72.6	4,900	18.1	100	0.4	2,400	8.9			27,000
Slovak Republic	21	6.1	96	27.7	171	49.3	1	0.3	53	15.3	5	1.4	347
Spain[c]	112	5.1	695	31.7	772	35.3	115	5.3	491	22.5	2	0.1	2,188
Sweden	33	10.0	0	0.0	196	59.6			100	30.4	0	0.0	329
Switzerland	2[z]	0.8	9	3.2	215	78.4	0	0.0	48[z]	17.5	[z]		274[z]
UK[c]	74	1.6	1,238	27.3	1,129	24.9	12	0.3	2,078	45.9			4,531
USA	613[aa]	2.3	7,641	28.3	8,088	30.0	508	1.9	10,150	37.6			27,000
Total[ab]	1,674	1.8	35,326	38.0	29,472	31.6	1,822	2.0	24,376	26.2	483	0.5	101,603

*Includes enteric fermentation and animal wastes. **Includes rice cultivation, agricultural waste burning and savannah burning. ***Includes *solvent use*, *industrial processes* and *land use change and forestry*. Emission estimates were provided for the following source/sink categories not addressed by the IPCC Guidelines: *industrial processes*, including iron and steel manufacturing, carbon black production and industrial incineration, inorganic chemical (carbide) manufacture, as well as compost, food processing, and sewage sludge from landfills.

Notes

a) Belgium did not report anthropogenic emissions of CH_4.
b) Figure corrected during the in-depth review.
c) Revised/additional data were provided during the in-depth review.
d) The electricity import correction of 0.1 Gg was subtracted by the secretariat from the subtotal given in the communication.
e) Methane emissions from refineries were included in NMVOC emissions estimates.
f) Emissions for base period (1985-1987): 8 Gg.
g) Emissions for base period (1985-1987): 448 Gg.
h) Emissions for base period (1985-1987): 205 Gg.
i) Emissions for base period (1985-1987): 4 Gg.
j) No activity/production data available.
k) Total emissions for base period (1985-1987): 665 Gg.
l) Parties did not provide inventory data according to the IPCC reporting format.
m) Party did not provide estimates but indicated that emissions were negligible.
n) Includes 118 Gg from animal waste. The estimate presented in the communication was <118 Gg.
o) Includes 296 Gg from "other" (primary production processing). The estimate presented in the communication was <296 Gg.
p) Estimate corrected during the review.
q) The secretariat chose to report the emissions total only, as the Party used the CORINAIR reporting format in providing its 1990 inventory data.
r) Emissions for base year (1988): 9 Gg.
s) Emissions for base year (1988): 3,870 (3,800-3,940) Gg.
t) Emissions for base year (1988): 1,450 Gg.
u) Emissions for base year (1988): 90 (40-130) Gg.
v) Emissions for base year (1988): 640 (436-835) Gg.
w) Emissions for base year (1988): 6,060 Gg.
x) Estimate calculated by the secretariat using the per capita emission and population figures provided by the Party, as well as emissions for base year (1989): 2,354 Gg.
y) Includes emissions from consumption (fuel combustion).
z) Energy and transformation industries, industry, commercial/institutional, residential, agriculture and forestry, biomass burned for energy, industrial processes, waste incineration for the production of energy were included in VOC emissions estimates.
aa) Includes emissions from Party's territories.
ab) The percentage of the total accounted for by each category is calculated on the basis of the overall total with the exclusion of Liechtenstein, Poland and Romania (93,201 Gg) since data for the individual categories for these Parties are not included in this table.

Figure A.2
Distribution of CH_4 emissions by source category

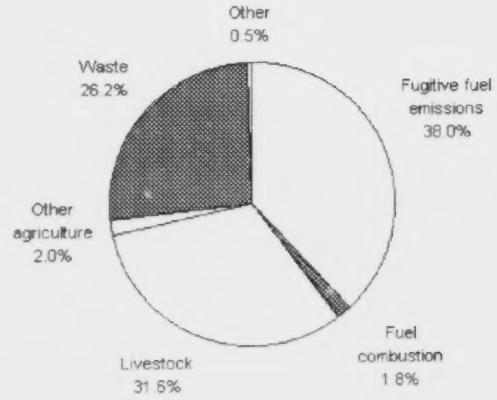


Table A.5 Anthropogenic emissions of N_2O, 1990 (Provisional)
(Gigagrams and percentage of total by Party)

	Energy				Industrial processes		Agriculture		Waste		Other*		Total
	Transport		Other										
	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)	%	(Gg)
Australia	2.3	3.8	1.3	2.1	0.8	1.3	52.4	87.1			3.4	5.7	60.1
Austria	0.5	13.0	0.9	22.0	0.6	15	2.0	49.0					4.1
Belgium[a]													
Canada	35.5	38.9	12.1	13.3	31.3	34.3	10.7	11.7	0.0	0.0	1.6[b]	1.8	91.2
Czech Republic[c]	1.0	4.2	18.0	75.0	3.0	12.5	2.0	8.3					24.0
Denmark	0.4	3.9	1.3[d]	12.7			8.5	83.3					10.2
Estonia			5.2[e]	84.6			1.0	15.4					6.2
Finland	5.0	22.7	2.0	9.1	3.0	13.6	12.0	54.5					22.0
France	4.1	2.3	7.5	4.2	102.5	58.0	61.3	34.7	1.2	0.7	0.1	0.1	176.7
Germany[c]	8.0	3.9	25.0	12.3	83.0	40.7	81.0	39.7	0.0	0.0	6.0	2.9	204.0
Greece	1.2	8.8	2.5	18.4	2.4	17.6	7.5	55.1					13.7
Hungary			7.3[f]	63.9			4.1[g]	36.1					11.4[h]
Ireland	0.2	0.0	2.6	6.1	0.0	0.0	39.5	93.4	0.0	0.0	0.0	0.0	42.3
Italy	3.5	2.9	38.2	31.8	14.8	12.3	58.7	48.8	0.1	0.1	5.0	4.2	120.3
Japan	13.0	27.5	8.6	18.2	15.0	31.7	4.7	9.9	6.0	12.7			47.3
Latvia	0.1	4.6	0.9	38.7			1.4	56.7					2.4
Liechtenstein[i]													0.1
Monaco[j]													
Netherlands	5.4	9.1	0.7	1.2	16.3	27.4	22.1	37.1	4.1	6.9	10.9[k]	18.3	59.5
New Zealand	5.2	62.7	2.5	30.1			[l]		0.6	7.2			8.3
Norway	1.0	6.4	1.5	96.0	6.7	42.9	6.4	41.0	0.0	0.0			15.6
Poland[m]	[n]		[o]				[p]						156.0[q]
Portugal	0.4	3.8	4.6	43.8	1.9	18.1	3.6	34.3	0.0	0.0	0.0	0.0	10.5
Romania													106.8[r]
Russian Federation													820.0
Slovak Republic[s]	0.2	1.4	3.6	24.5	2.1	14.3	8.8	59.9					14.7
Spain[c]	2.1	2.2	18.6	19.7	10.4	11.0	63.4	67.0	0.1	0.1	0.0	0.0	94.6
Sweden	0.4	2.6	4.2	27.7	2.7	17.7	7.9	51.9					15.2
Switzerland	0.8	5.3	0.7	4.6	0.4	2.6	13.3	87.5			0.0	0.0	15.2
UK[c]	1.8	1.7	3.0	2.7	93.0	85.9	10.5	9.7					108.3
USA	92.3	22.4	35.1[t]	8.5	96.1	23.4	187.9	45.7					411.4
Total[u]	184.4	11.6	207.9	13.1	486.0	30.6	670.7	42.2	12.1	0.8	27.0	1.7	2,672.1

*Includes *solvent use* and *land use change and forestry*. Emissions estimates were provided for the following source/sink categories not addressed by the IPCC Guidelines: solvent use, non-fertilizer induced emissions from agricultural soils, polluted inland and coastal waters, wastewater treatment, caprolactam production and animal wastes.

Notes

a) Party did not report anthropogenic emissions of N_2O.
b) Figure confirmed during the in-depth review.
c) Revised/additional data were provided during the in-depth review.
d) The electricity import correction of 0.2 Gg was subtracted by the secretariat from the subtotal given in the communication.
e) Includes emissions from industry, energy and transport.
f) Emissions from base period (1985-1987): 8.4 Gg. Includes transport.
g) Emissions from base period (1985-1987): 4.6 Gg.
h) Total emissions for base period (1985-1987): 13.0 Gg.
i) Parties did not provide inventory data according to the IPCC reporting format.
j) Party did not provide estimates but indicated that emissions were negligible.
k) Emissions from polluted inland and coastal water were reported as an additional source/sink category.
l) A range of 1 to 37 Gg was provided, but not included in the total reported in the current table.
m) The secretariat chose to report the emissions total only, as the Party used the CORINAIR reporting format in providing its 1990 inventory data.
n) Emissions for base year (1988): >0.3 Gg.
o) Emissions for base year (1988): >0.3 Gg.
p) Emissions for base year (1988): 73 (1-145) Gg.
q) Emissions for base year (1988): 73 Gg.
r) Estimate calculated by the secretariat using per capita emission and population figures by the Party, as well as emissions for base year (1989): 122.7 Gg.
s) Party provided estimates for an additional category, water surfaces (1.3 Gg), which is not included in this table.
t) Emissions from the Party's territories were not estimated.
u) The percentages of the total accounted for by each category are calculated on the basis of the overall total with the exclusion of Liechtenstein, Poland, Romania and the Russian Federation (1,590.2 Gg) since data for the individual categories for these Parties are not included in the table.

Figure A.3.
Distribution of N_2O emissions by source category

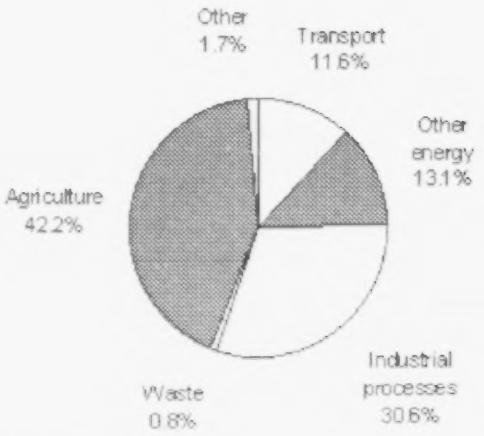


Table A.6 Anthropogenic emissions from international bunkers, 1990[a] (Gigagrams) **(Provisional)**

	CO_2	CH_4	N_2O	CO	NO_x	NMVOC
Australia	6,281	0.13	0.19	6.80	70.81	2.28
Austria						
Belgium						
Canada	5,632	0.29	0.60	37.80	17.70	10.70
Czech Republic						
Denmark	4,974	0.10	0.10	17.30	71.20	2.70
Estonia						
Finland	2,800	1.00	1.00		22.00	
France	8,586	0.10	0.20	20.80	110.50	5.30
Germany[b]	19,000	0.00		96.00	206.00	23.00
Greece	11,730					
Hungary						
Ireland	1,172	0.10	0.16	2.19	5.35	0.36
Italy	12,451	0.70	2.44	23.22	250.02	1.22
Japan	31,000					
Latvia						
Liechtenstein						
Monaco						
Netherlands	40,400					
New Zealand	2,398	1.10	2.20		44.10	
Norway	1,800	0.40	0.10	2.90	32.80	1.20
Poland[c]	[d]	[e]	[f]	[g]	[h]	[i]
Portugal	3,938	0.60	0.20	243.20	43.00	32.20
Romania						
Russian Federation						
Slovak Republic						
Spain[b]	18,024	2.03	0.30	17.01	271.87	11.43
Sweden	4,190	1.30	0.04	44.00	60.00	15.00
Switzerland	2,100					
UK[b]	20,729	0.44	0.18	26.90	249.51	3.40
USA	82,866					
Total	280,071	8.29	7.71	538.12	1,454.86	108.79

Notes

a) Austria, Belgium, the Czech Republic, Estonia, Hungary, Latvia, Liechtenstein, Monaco, Romania, the Russian Federation and the Slovak Republic did not report emissions from bunker fuels.
b) Revised/additional data were provided during the in-depth review.
c) Party did not provide 1990 emission estimates from bunker fuels.
d) Emissions for base year (1988): 530 Gg.
e) Emissions for base year (1988): 0.1 Gg.
f) Emissions for base year (1988): 0.001 Gg.
g) Emissions for base year (1988): 25 Gg.
h) Emissions for base year (1988): 10 Gg.
i) Emissions for base year (1988): 0.6 Gg.

Table A.7 Anthropogenic emissions of precursor gases, 1990[a] (Gigagrams) **(Provisional)**

	CO	NO_x	NMVOC
Australia	26,074	1,874	2,236
Austria	1,683	225	415
Belgium			
Canada	10,225[b]	2,090[b]	2,104[a]
Czech Republic[c]	685	877	313
Denmark	770[d]	269[e]	165[f]
Estonia	294	153	
Finland	487	295[g]	219
France	10,952	1,722	2,424
Germany[c]	10,455	3,008[g]	3,005
Greece	1,480	338	236
Hungary	734[h]	200[i]	143[j]
Ireland	429	115	197
Italy	9,333	2,128	2,401
Japan	2,809	1,898	2,060
Latvia	363	90	63
Liechtenstein[k]	2	1	2[b]
Monaco			
Netherlands	1,030	575	459
New Zealand	0	145	0
Norway	940	231	251
Poland	7,400[m]	1,450[n]	13,367[o]
Portugal	1,083	214	206
Romania[k]	3,179[p]	520[q]	1,084[r]
Russian Federation	8,100	3,000[g]	4,100
Slovak Republic	489	227	147
Spain[c]	5,573	1,201	1,080
Sweden	1,612	374	539
Switzerland	430	184[s]	297
UK[c]	6,682	2,740	2,540
USA	82,674	21,362[t]	19,123
Total	195,967	47,506	59,176

Notes

a) Belgium and Monaco did not report emissions of precursor gases.
b) Estimates corrected during the in-depth review.
c) Revised/additional data were provided during the in-depth review.
d) The electricity import correction of 0.7 Gg was subtracted by the secretariat from the subtotal given in the communication.
e) The electricity import correction of 24 Gg was subtracted by the secretariat from the subtotal given in the communication.
f) The electricity import correction of 0.1 Gg was subtracted by the secretariat from the subtotal given in the communication.
g) Estimates from the Party expressed as NO_2.
h) Emissions for base period (1985-1987): 743 Gg.
i) Emissions for base period (1985-1987): 231 Gg.
j) Includes methane VOCs. Figures given for 1991. Emissions for base period (which in this case is 1988): 205 Gg.
k) Parties did not provide inventory data according to the IPCC reporting format.
l) Corresponds to VOC emissions.
m) Emissions for base year (1988): 2,730 Gg.
n) Emissions for base year (1988): 600 Gg.
o) Emissions for base year (1988): >352 Gg.
p) Estimate calculated by the secretariat using the per capita emission and population figures provided by the Party, as well as emissions for base year (1989): 3,311 Gg.
q) Estimate calculated by the secretariat using the per capita emission and population figures provided by the Party, as well as emissions for base year (1989): 544 Gg.
r) Estimate calculated by the secretariat using the per capita emission and population figures provided by the Party, as well as emissions for base year (1989): 1,121 Gg.
s) Non-ferrous emissions reported as being <0.1 have not been included in this table.
t) Emissions from the Party's territories were not estimated.

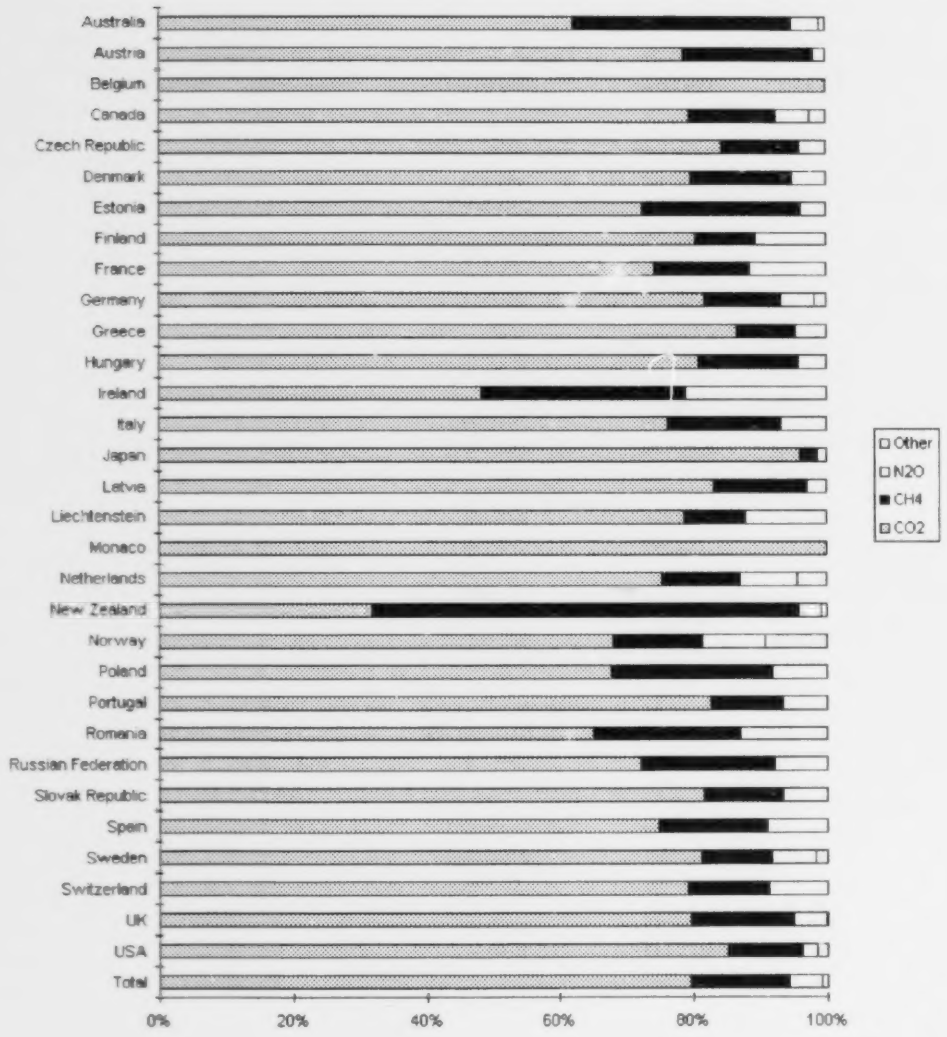
Table A.8 Anthropogenic emissions of other greenhouse gases, 1990[a] (Gigagrams) **(Provisional)**

	HFCs			PFCs		SF_6
	HFC 134a	HFC 23a	HFC 152a	CF_4	C_2F_6	
Australia				0.580	0.0400	
Austria						
Belgium						
Canada				1.400	0.1440	0.120[b]
Czech Republic						
Denmark						
Estonia						
Finland						
France						
Germany				1.000	0.1500	0.500
Greece						
Hungary						
Ireland						
Italy	0.00	0.00	0.00	0.014	0.0014	
Japan						
Latvia						
Liechtenstein						
Monaco						
Netherlands		0.00		0.516	0.0516	
New Zealand					0.100	
Norway			0.003	0.369	0.0160	0.092
Poland						
Portugal						
Romania						
Russian Federation						
Slovak Republic						
Spain						
Sweden		0.00			0.060	0.040
Switzerland						
UK				0.274	0.0280	
USA	0.5	5.52	0.300	2.700[b]		

Notes

a) Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Japan, Latvia, Liechtenstein, Monaco, Poland, Portugal, Romania, the Russian Federation, the Slovak Republic, Spain and Switzerland did not report emissions for these gases.
b) Estimates provided during the in-depth review.

Figure A.4
Relative contribution of different greenhouse gases by Party*



*Excludes land use change and forestry. "Other" includes PFCs, HFCs and SF_6. IPCC-1994 GWP values with a time-horizon of 100 years were used by the secretariat for comparative purposes. Only 10 Parties reported emissions for other greenhouse gases (see table A.8). New Zealand reported emissions for PFCs of 0.1 Gg. The secretariat has assumed that approximately 5 per cent of these emissions are from C_2F_6 and the remaining 95 per cent from CF_4. Belgium only reported CO_2 emissions. Monaco reported CH_4 and N_2O emissions as negligible.

(Provisional)

Table B.1. Projected anthropogenic emissions of CO_2, excluding land use change and forestry (Gigagrams)

	Data from inventory	Data from projection		Variations		Updated variations from projection based on in-depth reviews[f] (Percentage)
	1990 level[a] (Gg)	1990 level[b] (Gg)	2000 level[c] (Gg)	from inventory (Percentage)	from projection (Percentage)	
Australia	288 965	288 965	332 799	15.1	15.1	
Austria	59 200	59 900	65 800	11.1	9.8	
Belgium	114 410	106 300	104 900 - 109 360	--	(-1.3) - (2.9)	
Canada	457 441	461 200	510 000	11.5	10.6	12.5
Czech Republic	165 792	163 584	135 536	-18.2	-17.2	-17.0
Denmark	52 100	58 353	53 753	3.2	-7.9	
Estonia	37 947	..	..	--	--	
Finland	53 900	54 200	70 200	30.5	29.5	
France	366 536	367 000	399 000	8.8	8.7	
Germany	1 015 000	1 032 000	..	--	--	(-15) - (-13)
Greece	82 100	82 100	94 500	15.1	15.1	
Hungary	71 673	69 116	68 741	-4.1	- 0.6	
Hungary	81 534[d]	81 534[d]	68 741	-15.7	-15.7	
Ireland	30 719	30 719	36 988	20.4	20.4	
Italy	428 941	423 776	482 440	12.5	13.8	
Japan	1 173 360	1 173 000	1 200 000	2.3	2.3	
Latvia	22 976	22 976	16 956	-26.2	-26.2	
Liechtenstein	208	208	245	18.1	18.1	
Monaco	71	..	..	--	--	
Netherlands	167 600	174 000	167 600	0.0	-3.7	+
New Zealand	25 530	25 530	29 550	15.7	15.7	-
Norway	35 533	35 400	39 500	11.2	11.6	16.0
Poland	414 930	-	338 000 - 455 000	(-18.5) - (9.7)	--	
Poland	483 700[e]	458 000[e]	338 000 - 455 000	--	(-26.2) - (-0.7)	
Portugal	42 148	38 689	54 274	28.8	40.3	
Romania	171 103	..	..	--	--	
Russian Federation	2 386 595	2 330 000	1 930 000 - 2 026 000	(-19.1) - (-15.1)	(-17.2) - (-13.0)	
Slovak Republic	58 278	57 808	48 639	-16.5	-15.9	
Spain	248 005	222 908	276 523	--	24.1	15.8
Sweden	61 256	61 300	63 800	4.2	4.1	
Switzerland	43 600	45 400	43 800	0.5	-3.5	
UK	577 012	586 720	586 720	1.7	0	(-8) - (-4)
USA	4 957 022	5 012 789	5 163 136	4.2	3.0	+

[a] Data from inventory table A.1.

[b] Minor differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources. For some countries differences are also due to statistical adjustments.

[c] "With measures" levels for 2000.

[d] Average of emissions in 1985-1987.

[e] Base year 1988.

[f] Additional and/or revised information for projections was often provided in the course of in-depth reviews. Where possible, this information is reflected here in the form of *preliminary* revised estimates. Further additions to the preliminary revisions presented here are envisaged in the second compilation and synthesis of national communications from Annex I Parties. A plus or minus symbol indicates an increase or decrease to the variations from projection column and that an exact numerical figure is not currently available. Additional details on revisions for each country can be found in the individual in-depth review reports.

Notes*

Australia: The effect of measures in 2000 (table 6.2, p.74) was subtracted from the reference scenario (table 6.1, p.72) reflecting "delayed or partial implementation, and/or other conditions which reduce the probability of effectiveness. This scenario can be taken to be close to the current rate of implementation" (p.74). In general, Australia assumes that existing measures will continue at the current rate of implementation (p.80). Fiscal years are used.

Austria: The 2000 figures are from the Institute of Economic Research (IER) reference scenario. Process emissions are assumed to be stable (footnote, p.2) and added to pyrogenic emissions. The communication states that the scenario does not represent all policies and measures implemented or committed to; these are not fully quantified and may permit Austria to "stabilize its CO_2 emissions by the time period around 2000 to 2005" (p.4). The scenario includes structural shifts in industry away from energy intensive primary industries, sustained efforts to improve energy utilization (generating 1.5 per cent energy efficiency improvement per annum) and preferential treatment of less environmentally damaging and renewable resources as opposed to fossil fuels (p.82).

Belgium: Two different projection approaches resulted in -1.3 per cent and 2.9 per cent growth, respectively. The projection figures only reflect energy-related emissions and do not include the impact of the European energy/ CO_2 tax under consideration. Comparison between inventories and projection figures are non-applicable because the statistical base for the projection models is significantly different from the inventory data.

Canada: Projections (table 13.11, p.128) incorporate "the effects of a number of federal and provincial policies, programs and measures currently in place or in the process of implementation" (p.128). The figure in the "updated variations" column refers to revised projections as reflected in Canada's National Action Program on Climate Change from 1995.

Czech Republic: The figures for 2000 were calculated from percentage decreases projected (12.3 per cent) and additional information (p.14). The estimate of effects of policies and measures implemented (p.27) was subtracted from a scenario described as assuming "slow implementation of measures, or not at all" (p.13).

Denmark: Figures were taken from table 3.2, p.41, of the communication, noting that slightly revised figures were given on p.75. Projections assume *energy* measures (Energy 2000 Follow Up = 1993) yet to be implemented, and current policies in other sectors. The projection figure used for 1990 is adjusted for electricity imports.

Estonia: No projections were provided.

Finland: The projection allows for the construction of Finnish electricity production capacity to replace current imports (p.19), which in 1990 were equivalent to 11 Mt CO_2. The projection figure is considered the most likely option and takes into account energy cuts brought about by taxation, energy conservation, more use of bioenergy and the adoption of new technology.

France: The projection figures are taken from the summary of the national communication, included in the report "France and the Greenhouse Effect" (p. 27). The scenario includes measures such as a CO_2 tax equivalent to 70 ECU per tonne of carbon.

Germany: For 2005 the level was projected to be 980,000 Gg (table 6.15, p.144). (The communication does not specify which measures are included in the projection for 2005.) During the in-depth review an estimate of CO_2 emissions for 2000 of -15 to -13 per cent less than in 1990 was provided.

Hungary: Hungary has asked for special consideration under Article 4.6 to use 1985-1987 as the base period. The average emissions comparable with the projections figures in these years were 81,534 Gg. The projections only include fuel-related emissions. The figures assume implementation of the National Energy Efficiency and Energy Improvement Programme (2000 S scenario, table 6.6, p.78). Figures based on other methodologies for emission calculations are also given (pp.73-74).

Ireland: A continuation of existing policies would indicate a greater increase ("20 per cent, or an increase of 11 per cent if account is taken of increased carbon capacity" (p.2)).

Italy: A business-as-usual scenario was chosen (tables 4.4 and 4.5), noting that scenarios for net emissions were given "with measures" (in table 4.8), resulting in lower estimates for 2000. If the projection for *land use change and forestry* is used to adjust the figures in table 4.8, the "2000 projection" figures would be 438,440 - 459,440 Gg, and the "variations from projection", 3.5 - 8.4 per cent.

Japan: The projection is based on the Long-term Energy Supply and Demand Outlook. The projection assumes that "all energy conservation measures incorporated in the Outlook are fully implemented" (p.140) and control measures in *industrial processes* and measures to reduce CO_2 emissions from municipal waste are fully implemented (e.g., waste projection is "based on the assumption that serious efforts will be made to thoroughly recycle paper waste" (p.141)). Fiscal years are used.

Monaco: Reported that CO_2 emissions are unlikely to increase by the year 2000.

Netherlands: The projection takes into account the effects of policies and measures decided prior to the submission of the communication (Energy Policy Scenario, p.59). The 1990 projection figure includes a temperature adjustment. During the in-depth review, information was given that showed a higher growth in emissions than was reflected in the projections.

New Zealand: The figures for 2000 were given as an interval (29,160 - 29,940 Gg. table 7.1, p.46). The measures included in the projection are not specified. During the in-depth review, information was given that showed a higher actual growth in the 1990s than was reflected in the projections.

Norway: The projection reflects "current policies" (p.36) , including carbon taxes that were implemented in 1991. A revision was made during the in-depth review to account for higher growth than expected, especially in the off-shore petroleum sector.

Poland: Poland has asked for special consideration under Article 4.6 to use 1988 as the base year. Poland presented a set of different projections for 2000 based on two approaches. "The presented assessments of future greenhouse gas emissions do not take into account the currently undertaken actions, ... which lead to the further emission reductions" (p.44). These projections are for the energy sector only. The 1988 inventory figure corresponding to the energy section projections would be 462,820 Gg.

Portugal: Projections are for emissions from fuel combustion only.

Romania: No projections were provided.

Russian Federation: The projection figures for 2000 were given as a range of CO_2 emissions for probable and optimistic scenarios based on possible versions of fuel and energy complex development and with consideration for consumption of primary energy and its transformation products in all sectors of the national economy (pp. 50-51). Projections are for emissions from fuel combustion only.

Spain: The projection takes into account only energy-related CO_2. It is based on the reference scenario from the Plan Energético Nacional 91 (PEN 91), and when the effects of measures contained in the Plan de Ahorro y Eficiencia Energética (PAEE) (described in the communication), were taken into account, the projected increase of emissions of CO_2 was reduced from 45 per cent to 24 per cent in 2000 from the 1990 level (p.91). Actual development has not been in line with the assumptions from PEN 91; GDP growth especially has been lower. A revision is therefore envisaged. A revision of the estimates for GDP growth from 1995 to 2000 (3%/year) and of the evaluation of measures in the energy sector leads to a smaller increase in CO_2 emissions from 1990 to 2000 (from 218,000 to 252,502, as revised during the in-depth review).

Sweden: The projection is based on political decisions made to date (p.63), except for the changes in energy taxes as from 1 July 1994; the forecasts were made before that date. Sweden notes that if temperature adjustments of 3 $MtCO_2$ in the figures for 1990 had been made, projected emissions would have been stable (p.68).

Switzerland: Bunker fuels (2.1 $MtCO_2$ in 1990 and 2.5 $MtCO_2$ in 2000) are subtracted from the aggregate figures given in the report. The projection includes only measures already implemented or decided as of 1994 (pp.18-20, 74, 152). The inventory figure for 1990 was not adjusted for temperature (p.38), but the projection is based on a temperature-adjusted 1990 level of emissions (p.79).

UK: The "central growth/low fuel price" scenario (among several) is presented as the reference scenario for emissions. This includes an agreement with electric utilities on fuel choice and use of CHP after 1990 (p.17). In this projection emissions increased 10 MtC. The measures in place are estimated to reduce emissions in 2000 by 10MtC, which is subtracted from the projected 2000 level (p.16) and used for the table. A revision was provided during the in-depth review to account for new energy projections indicating CO_2 emissions of 4-8 per cent below 1990 levels by the year 2000.

USA: The projection includes policies and measures proposed by the Administration in the Climate Change Action Plan (technical supplement to the communication, pp.33-60), assuming "that the funding required will be committed" (technical supplement, p.55). The communication notes that some actions which "may yield significant reductions" are not included (p. 187), while economic growth has been more robust and oil prices lower than assumed. During the in-depth review stronger underlying growth in emissions was reported owing to more robust growth in the economy and reduced implementation of the Climate Change Action Plan.

*All references in parentheses are to the national communications.

(Provisional)

Table B.2. Projections for other greenhouse gases[a]
(CO_2 equivalent in Gigagrams, using 1994 GWPs, time-horizon = 100 years)[b]

	1990 level			2000 level			Variations		
	HFCs	PFCs	SF_6	HFCs	PFCs	SF_6	HFCs	PFCs	SF_6
	(CO_2 equivalent in Gg)			(CO_2 equivalent in Gg)			(Percentage)		
Australia	..	4 100	..	..	1 700	..	--	-59	--
Canada	..	10 600	2 990	..	14 100	..	--	33	--
Italy	0	106	..	2 500	63	..	≥ 0	-41	--
New Zealand	..	700	..	..	700	..	--	~ 0	--
Norway	0.4	2 500	2 300	600	1 700	800	≥ 0	-32	-65
Sweden	0	400	1 000	2 600	400	1 000	≥ 0	~ 0	~ 0
UK	..	2 100	..	..	~ 100	..	--	-95	--
USA	67 500	17 000	..	120 300	9 700	..	78	-43	--

[a] The figures are rounded.
[b] Figures provided on a weight basis have been converted.

Notes*

Australia: Estimates of effects of measures were subtracted from the baseline scenario (table 6.5, p.79). The same split between CF_4 and C_2F_6 was assumed in 2000 as in 1990 (table 6.1, p.72), making it possible to recalculate from other GWPs.

Canada: Estimates provided during the in-depth review.

New Zealand: Emissions of PFCs of 0.1 Gg were reported, largely from aluminium smelting. The secretariat has assumed that approximately 95 per cent was CF_4 and 5 per cent C_2F_6.

Norway: The same split between CF_4 and C_2F_6 was assumed in 2000 as in 1990, making it possible to recalculate from other GWPs.

UK: The lowest scenario (reported as most likely) has been chosen.

(Provisional)

Table B.3. Projected anthropogenic emissions of CH_4 (Gigagrams)[a]

	Data from inventory	Data from projection		Variations from projection
	1990 level[b]	1990 level[c]	2000 level[d]	
	(Gg)	(Gg)	(Gg)	(Percentage)
Australia	6 243	6 244	6 480	3.8
Austria	603	~ 600	~ 600	~ 0.0
Belgium	..	..	..	--
Canada	3 089	1 136	1 291	--
Czech Republic	942	623	511	-18.0
Denmark	406	406	354	-12.8
Estonia	509	..	..	--
Finland	252	252	204	-19.0
France	2 896	2 900	2 900	0.0
Germany	5 723	6 200	..	--
Greece	343	343.0	<343.0	<0.0
Hungary	545	492.0	278	- 43.5
Ireland	796	796	799	0.4
Italy	3 901	3 900	2 965	-24.0
Japan	1 377	1 380	1 150	-16.7
Latvia	159	159	114	-28.2
Liechtenstein	1	..	..	--
Monaco	..	..	..	--
Netherlands	1 067	1 067	786	-26.3
New Zealand	2 112	2 051	≤ 1 931	-5.9
Norway	289	291	278	-4.5
Poland	6 100	6 107	1 780	-70.9
Poland	6 060[e]	6 060[e]	1 780	-70.6
Portugal	226	..	..	--
Romania	2 355	..	..	--
Russian Federation	27 000	..	..	--
Slovak Republic	347	342	293	-14.3
Spain	2 188	..	..	--
Sweden	329	329	300	-8.8
Switzerland	274	274	256	-6.6
UK	4 531	~ 5 000	4 400	≤ -10.0
USA	27 000	27 669	22 335	-19.3

[a] Figures provided in CO_2 equivalent and in MtC have been converted.

[b] Data from inventory table A.4.

[c] Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding, calibration of models, or the projection of only a subset of the sources.

[d] "With measures" levels for 2000.

[e] Base year 1988.

Notes*

Australia: The effects of measures are subtracted (table 6.3, p.76) from the reference "without measures" scenario (table 6.1, p.72) to obtain a "with measures" projection.

Austria: This is a "without measures" projection (p.88).

Canada: The 1990 projection figure only refers to energy-related emissions. In the 1990 inventory these were 1,085 Gg (table 13.11, p.128).

Czech Republic: Three major sources were projected covering 71 per cent of the inventory figure for 1990 under the assumption that measures will be implemented slowly or not at all (p.14).

France: The projection figures are taken from the summary of the national communication included in the report "France and the Greenhouse Effect" (p. 27).

Germany: For 2005 the figure was 3,250 Gg (table 6.11, p.142).

Greece: Overall emissions in 2000 are expected to be below the 1990 level, but no specific projection was provided.

Hungary: The corresponding 1985-1987 figure was 604.9 Gg. The figure does not include emissions from waste (fig. 6.6, p. 78). The decline reflects "the collapse of domestic coal mining and ... the significant changes in animal livestock" (p.78). The 2000 S scenario is used.

Italy: Slightly higher projections were given in table 4.8.

Japan: The projection takes into account only the effects of energy conservation and waste reduction measures (table 4.4.1, p.143).

Monaco: Emissions expected to be negligible in 2000 as in 1990.

Netherlands: The projection takes into account only the effects of policies initiated under the Second National Environmental Policy Plan (NEPP2) and the Second Memorandum on Energy Conservation (p.164).

New Zealand: The 1990 projection figure does not include energy-related emissions or emissions from *land use change and forestry*. In the 1990 inventory, all other emissions amounted to 2,051 Gg.

Poland: The 1990 figure is calculated by a different methodology from that used for the 1988 figure.

*All references in parentheses are to the national communications.

(Provisional)

Table B.4. Projected anthropogenic emissions of N_2O (Gigagrams)[a]

	Data from inventory	Data from projection		Variations from projection
	1990 level[b]	1990 level[c]	2000 level[d]	
	(Gg)	(Gg)	(Gg)	(Percentage)
Australia	60.1	60.1	61.1	1.5
Austria	4.1	~ 4.2	~ 4.2	~ 0.0
Belgium	..	..	..	..
Canada	91.2	47.0	51.9	..
Czech Republic	24.0	..	..	..
Denmark	10.2	10.5	11.5	9.5
Estonia	6.2	..	..	..
Finland	22.0	23.0	28.0	21.8
France	176.7	177.0	93.0	- 47.0
Germany	204.0	220.0	..	..
Greece	13.7	13.7	>13.7	>0.0
Hungary	11.4	7.3	6.2	-14.3
Ireland	42.3	42.3	43.7	3.3
Italy	120.2	119.4	123.6	3.5
Japan	47.3	47.0	~ 52.0	8.3
Latvia	2.4	2.4	1.4	-41.6
Liechtenstein	0.1	..	..	..
Monaco	..	..	..	..
Netherlands	59.5	59.6	62.2	4.4
New Zealand	8.3	..	..	~ 0.0
Norway	15.6	15.6	16.3	4.5
Poland	156.0	..	..	..
Poland	73.0[e]	73.0[e]	61.8	-15.3
Portugal	10.5	..	..	..
Romania	106.8	..	..	..
Russian Federation	820.0	..	..	..
Slovak Republic	14.7	14.7	14.1	-4.1
Spain	94.6	..	..	..
Sweden	15.2	15.2	13.0	-14.6
Switzerland	28.6	0.9	1.5	..
UK	108.3	~ 110.0	~ 30.0	~ -72.7
USA	411.4	529.7	421.0	-20.5

[a] Figures provided in MtC equivalents have been converted.

[b] Data from inventory table A.5.

[c] Differences in 1990 levels between inventories and projections are, for example, due to late revisions of inventories, rounding,calibration of models, or the projection of only a subset of the sources.

[d] "With measures" levels for 2000.

[e] Base year 1988.

Notes*

Australia: The effects of measures are subtracted (p. 76) from the "without measures" scenario (p.72) to obtain a "with measures" figure.

Austria: This is a "without measures" projection (p.88).

Canada: The 1990 projection figure refers only to energy-related emissions. In the inventory for 1990 these were 47.6 Gg (p.128).

Germany: The figure for 2005 was 170 Gg (table 6.11, p.142).

Greece: An increase in emissions is expected for the year 2000, but no specific projection was provided.

Japan: The projection figure for 2000 refers only to the effects of energy conservation and waste reduction measures (p.144).

Monaco: Emissions expected to be negligible in 2000 as in 1990.

Netherlands: The projection figure for 2000 incorporates the effects of policies and measures initiated under NEPP2. However, a number of policies implemented to reduce N_2O emissions associated with fertilizer application and animal manure have not been incorporated because of a lack of knowledge about their effects (p.65).

Switzerland: The projection figure covers only a minor part of the sources (from transportation) and does not allow for calculation of trends (p.80).

Hungary: The corresponding 1985-1987 inventory figure was 8.36 Gg. The projection figures include fuel-related emissions only. The 2000 S scenario is used (table 6.2b, p.74).

France: The projection figures are taken from the summary of the national communication included in the report "France and the Greenhouse Effect" (p. 27).

Poland: Different methods were used for calculating 1988 and 1990 figures. The communication states that the methodology used for 1990 overestimates the emissions and this, rather than real increase, explains the difference. Therefore a comparison with the 1990 figures appears to be non-applicable.

Romania: No projections were provided.

*All references in parentheses are to the national communications.

(Provisional)

Table B.5. Projected anthropogenic emissions of all greenhouse gases, excluding land use change and forestry[a]

(CO_2 equivalent in Gigagrams, using 1994 GWPs, time-horizon = 100 years)[b]

	Data from inventory	Data from projection		Variations from projection
	1990 level	1990 level[c]	2000 level	
	(CO_2 equivalent in Gg)	(CO_2 equivalent in Gg)		(Percentage)
Australia	465 885	465 909	516 822	10.9
Austria	75 567	~ 74 600	~ 81 886	~ 9.7
Belgium	114 410	106 300	104 900 - 109 360	(-1.3) - (2.9)
Canada	564 805	504 542	558 757	10.7
Czech Republic	196 551	178 848	148 056	-17.2
Denmark	65 413	71 765	66 221	-7.7
Estonia	52 401	..	..	..
Finland	67 114	67 734	84 158	24.2
France	493 852	495 000	500 000	1.0
Germany	1 220 493	1 256 500	..	..
Greece	94 887	82 100	94 500	15.1
Hungary	88 764	83 629	77 601	-7.2
Ireland	64 169	64 169	70 968	10.6
Italy	563 943	557 643	597 200	7.1
Japan	1 222 607	1 222 650	~ 1 245 336	~ 1.8
Latvia	27 639	27 639	20 199	-26.9
Liechtenstein	264	208	245	18.1
Monaco	71	..	..	..
Netherlands	213 377	219 810	207 383	-5.7
New Zealand	80 713	76 480	77 560	1.4
Norway	52 595	52 478	54 790	4.4
Poland[d]	655 530[d]	629 830[d]	401 386 - 518 386	(-36.3) - (-17.7)
Portugal	51 062	38 689	54 274	40.3
Romania	262 977	..	..	..
Russian Federation	3 310 495	2 330 000	1 930 000 - 2 026 000	(-17.2) - (-13.0)
Slovak Republic	71 483	70 891	60 329	-14.9
Spain	331 883	222 908	276 523	24.1
Sweden	75 739	74 383	75 440	1.4
Switzerland	59 883	52 394	50 567	-3.5
UK	724 754	~ 747 620	~ 704 520	~ -4.2
USA	5 838 784	5 949 981	5 979 274	0.5

[a] Figures from tables 1, 2, 3 and 4 have been used as the starting point for these projections. Only gases and sources that were projected are included.

[b] Figures differ from those in the communications where countries did not use IPCC 1994 GWPs (time-horizon 100 years).

[c] Major differences between inventory figures and projection figures for 1990 indicate that projections were not given for all gases reported in the inventories or for all sectors, or that temperature or electricity imports adjustments had been taken into account.

[d] 1988 is used as the base year in both inventories and projections.

Notes

Belgium: Only CO_2 emissions (excluding the *land use change and forestry* sector) were projected.

Canada: During the in-depth review a revision to the projected emissions was provided which indicated a variation of 13 per cent from projection rather than 10.7 per cent.

Estonia: No projections were provided.

France: The projection figures are taken from the summary of the national communication included in the report "France and the Greenhouse Effect"

Germany: As indicated in table B.1, revisions were provided during the in-depth review for CO_2 emissions. In the absence of projection information on other gases, these would make the percentage variation from projection in table B.5 negative.

Greece: Only CO_2 emissions (excluding the *land use change and forestry* sector) were projected.

Italy: The "business-as-usual" scenario was used, noting that seemingly lower figures for the year 2000 were given in table 4.8 (see note to table 1). The figures include HFCs and PFCs.

Liechtenstein: Only CO_2 emissions (excluding the *land use change and forestry* sector) were projected.

Monaco: Emissions are unlikely to increase by the year 2000.

New Zealand: During the in-depth review a revision to the projected emissions was provided which showed a smaller percentage variation than previously indicated and given in table B.5.

Norway: As indicated in table B.1, revisions provided during the in-depth review would make the percentage variation from projection larger than previously indicated and given in table B.5.

Portugal: Only CO_2 emissions (excluding the *land use change and forestry* sector) were projected.

Romania: No projections were provided.

Russian Federation: Only CO_2 emissions (excluding the *land use change and forestry* sector) were projected.

Spain: Only CO_2 emissions were projected. As indicated in table B.1, revisions provided during the in-depth review would change the percentage variation from projection in table B.5 from 24.1 to 15.8.

Sweden: During the in-depth review a revision provided to the projected emissions showed a smaller percentage variation than previously indicated and given in table B.5.

UK: As indicated in table B.1, revisions were provided during the in-depth review that would make the percentage variation from projection smaller than previously indicated and given in table B.5.

USA: During the in-depth review a revision to the projected emissions was provided which showed a larger percentage variation than previously indicated and given in table B.5.

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